



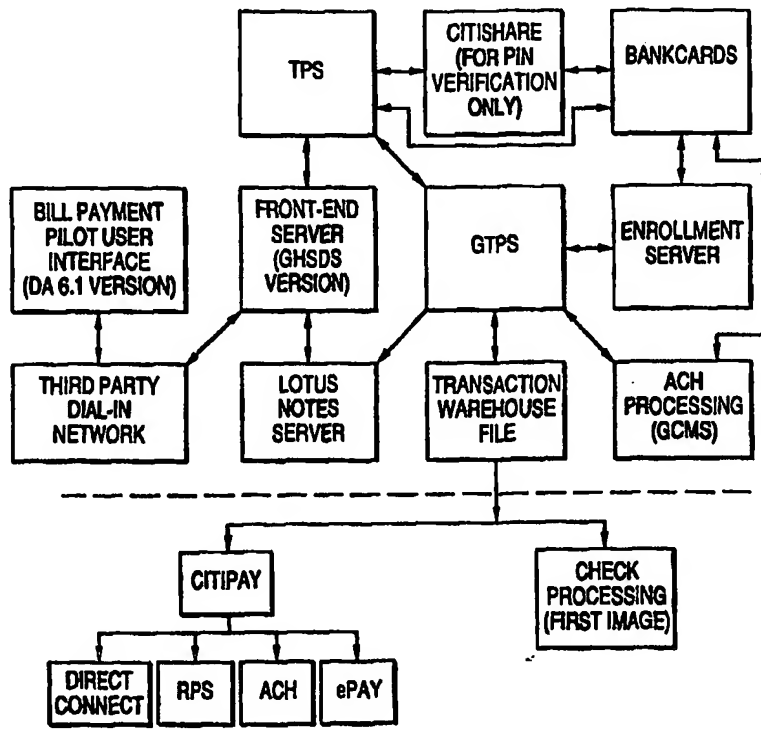
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G06F 157/00		A1	(11) International Publication Number: WO 98/58339
			(43) International Publication Date: 23 December 1998 (23.12.98)
(21) International Application Number: PCT/US98/12235 (22) International Filing Date: 17 June 1998 (17.06.98) (30) Priority Data: 60/049,850 17 June 1997 (17.06.97) US (71) Applicant: CITIBANK, N.A. [US/US]; 399 Park Avenue, New York, NY 10043 (US). (72) Inventors: MURPHY, Steve; 6 Eagle Hill Road, Holmdel, NJ 07733 (US). EHRLICH, Leslie; 315 East 68th Street, New York, NY 10021 (US). (74) Agent: MARCOU, George, T.; Kilpatrick Stockton LLP, Suite 800, 700 13th Street, N.W., Washington, DC 20005 (US).			(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: A NOVEL METHOD AND SYSTEM FOR IMPROVED BILL PAYMENT

(57) Abstract

A bill payment method and system which facilitate consumers to make payment remotely. Consumers (1) is connected to a communication link (3) to the network of a financial institution (6) which has a communication link (3) to a database (4) which assays the balance in the consumer's checking account. The consumer (1) has also a credit card account with the financial institution (6). Upon making a payment, the consumer's checking account is checked for sufficient available funds. If there is an insufficient amount of funds, the consumer's credit card is debited for the necessary amount.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

A NOVEL METHOD AND SYSTEM FOR IMPROVED BILL PAYMENT

BACKGROUND OF THE INVENTION

Field of the Invention:

5 The present invention relates generally to a method and system for home-based bill payment. More specifically, the present invention pertains to a home-based bill payment system that provides improved payment capability.

Description of Related Art:

10 For most customers, paying bills is a necessary and unpleasant chore. While they believe that they are good at paying their bills, it is tedious and time consuming. Furthermore, the vast majority manage their cash flow day to day. They juggle their bills against their income, carefully calculating how much they have, who they have to pay when, and who they can put off until next month.

15 Paying their bills can be more than a chore, it can evoke negative emotions of lack of control over their financial lives, not having enough money, and worries about the future.

 Consumers are interested in tools which can help them make the bill payment chore go faster and easier and which can assist them in managing their

20 finances. Some bill payment programs are commercially available. For example, Quicken is a software product available on the market for managing money. While some consumers use Quicken to help them manage their money, many believe that the program is too complicated and confusing. In addition, programs such as Quicken can cause worry and insecurity in consumers because the programs include

25 many functions, such as investments, budgeting and tax shelters, that the majority of consumers will not use. Further, commercially available bill payment systems do not offer enhanced payment capability.

1

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a bill payment system which links a customer to a financial institution and which provides improved payment capability.

5 It is another object of the present invention to provide a bill payment system which links a customer to a financial institution, which has an engaging, easy to use interface, and which provides improved payment capability.

 It is yet another object of the present invention to provide a bill payment system which links a customer to a financial institution, which furnishes
10 clarity and learnability to the customer by focusing on the central bill payment processes, and which provides improved payment capability.

 It is another object of the present invention to provide a bill payment system which links a customer to a financial institution, which provides the comfort and convenience of being able to keep one's checking account at their local bank,
15 and which provides improved payment capability.

 It is another object of the present invention to provide a method of paying bills which links a customer to a financial institution and which provides improved payment capability.

 It is another object of the present invention to provide a method of
20 paying bills which links a customer to a financial institution, which has an engaging, easy to use interface, and which provides improved payment capability.

 It is yet another object of the present invention to provide a method of paying bills which links a customer to a financial institution, which furnishes clarity and learnability to the customer by focusing on the central bill payment processes,
25 and which provides improved payment capability.

 It is another object of the present invention to provide a bill payment system which links a customer to a financial institution, which provides the comfort and convenience of being able to keep one's checking account at their local bank institution, and which provides improved payment capability.

These objects, among others, have been provided by a method of bill payment, comprising: initiating a communication link between a user's computer and a server on a computer network of a financial institution, wherein the user has at least one credit card account and at least one checking account; the user selecting a payee to be paid and an amount to be paid to the payee; the computer network initiating a communication link between the financial institution and a database which assays the balance in the user's checking account; the computer network querying the database to determine whether the user has sufficient funds in the user's checking account to cover the amount to be paid to the payee; wherein if there are not sufficient funds in the user's checking account to cover the amount to be paid to the payee, the computer network of the financial institution will debit the amount to be paid to the payee to the user's credit card account; and disbursing the amount to be paid to the payee. In a preferred embodiment of the present invention, the database is the Automated Clearing House.

These objects among others, have also been provided by means of a system for bill payment comprising: a communication link between a user's computer and a server on a computer network of a financial institution; a communication link between the financial institution and a database which assays the balance in the user's checking account; debiting means for debiting the amount to be paid to the payee to the user's credit card account if there are not sufficient funds in the user's checking account to cover the amount to be paid to the payee; disbursing means for transferring the amount to be paid to the payee.

Such features have not been provided in the prior art.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same become better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Figure 1 represents one embodiment of the present invention for a home-based bill payment application with improved payment capability;

Figure 2 is a flow-chart indicating the processes for processing solicited and unsolicited requests for the present invention;

5 Figure 3 is a flow chart depicting one embodiment of the present invention in which a payment is applied between a checking account and a credit card account depending upon the whether there are sufficient funds in the checking account/demand deposit account ("DDA"); and

10 Figure 4 represents one embodiment of the home-based bill payment system corresponding to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Other features of the invention will become apparent in the course of the following descriptions of exemplary embodiments which are given for
15 illustration of the invention and are not intended to be limiting thereof.

One aspect of the present invention is a user interface. This user interface permits a customer of a financial institution to communicate with a server for the bill payment application located on the computer network of the financial institution. In one preferred embodiment of the present invention, the customer
20 communicates with the financial institution by means of direct dial access. In another preferred embodiment, the customer communicates with the financial institution by means of the Internet. For example, in the present invention, a customer can use a closed dial-in network and a browser to directly connect the customer's personal computer ("PC") with the bill payment application on the
25 financial institution's computer network system. In a preferred embodiment of the present invention, Citibank's Bankcard's Bill Payment log-on screen contained on its Global Home Service Delivery System ("GHSDS") is employed. In this embodiment, the customer dials Citibank directly over a secure, local access network.

In a preferred embodiment of the present invention, the design of this interface is Citibank's Global Remote Access Interface Layer ("GRAIL") style guide and the Retail Bank's Direct Access 6.1 interface.

5 The system of the present invention requires that the customer log on to a server supported by the financial institution. Because customer information will be stored on and retrieved from the client PC, the sign-on sequence will differ for initial and subsequent usage.

10 In one embodiment of the present invention, there will be a mail server located on the financial institution's computer network for transmitting messages back and forth between the customer's PC and the financial institution's computer network. In a preferred embodiment of this feature of the invention, the mail messages will not be checked before allowing the customer to log on. In one preferred embodiment of the present invention, a customer will access Global Home Service Delivery System ("GHSDS") and then the mail server will be contacted.

15 Once the mail server has been checked, a message will be presented to the customer informing them if there is mail. If there is no mail, no message will be presented.

If the customer is signing on for his initial use of the financial system, then, in one preferred embodiment of the present invention, the customer, upon logging on, will be presented with an initial screen having two entry fields, one for

20 entry of the customer's name and a second for entry of the customer's account number. Typically, the name field would permit entry of a maximum of 24 characters and the account number field would be 16 characters. After the customer enters the data into these two fields, he is presented with a second screen, the modem setup screen. Here, the customer chooses modem type, modem speed, other

25 connection options. After choosing the modem parameters, the customer is presented with a third screen, the Account Number/Personal Identification Number (PIN) screen. At this screen, the Account Number will be pre-filled, based on the customer's entry at the first screen, but the customer will be prompted to enter his PIN. The Account Number cannot be altered at this screen. The PIN and Account

30 Number information is then forwarded to the financial institution for verification. If

the customer's name, Account Number, and PIN are verified by the financial institution, then the financial institution will send a signal, granting the customer access to the financial institution's bill payment application.

5 In a preferred embodiment of the invention, the initial sign in screen will allow the customer to delete their name and re-add with another name and/or account number. This is necessary in the event of account number re-issuance or a name change.

10 If the customer is signing on for a use subsequent to his initial use of the financial system, then, in one preferred embodiment of the present invention, the customer is, in a first screen, presented with choice of name or "New User," no Account Number is displayed on this screen. Customer then selects name or "New User." If the customer selects his or her name, then an Account Number/PIN screen is presented to the customer and the customer enters his or her PIN. The Account Number will be pre-filled based on the customer's entry in the Name/Account
15 Number screen; the Account Number cannot be altered on this screen. The PIN and Account Number information is then forwarded to the financial institution for verification. If the customer's name, Account Number, and PIN are verified by the financial institution, then the financial institution will send a signal, granting the customer access to the financial institution's bill payment application. If the
20 customer selects "New User," then the procedure follows that described above.

In a preferred embodiment of the present invention, the account number and PIN will be encrypted during transmission.

25 In an embodiment of the present invention the bill payment home screen will have three zones: a channel selection zone, a task bar zone, and a work area. In a typical arrangement, the channel selection zone is located at the bottom of the screen, the task bar is on the left of the screen, and the work area is in the central section of the screen. In one preferred embodiment, navigation through the bill payment system proceeds as found in the GRAIL system.

30 In an embodiment of the present invention employing a browser to link to a financial institution's computer network, browser navigational controls (e.g.

"Back," "Forward" and the address line) are not enabled to navigate within the payment system. If the browser navigational controls cannot be removed from the browser, the navigational controls are disabled. This can be achieved by having the initial configuration of the browser set to only display the work area - not the navigational control buttons. The customer will still be able to display the controls by changing the configuration of the browser. The buttons will still be visible, but will not be able to navigate through the bill payment application. If the customer attempts to use the any browser navigational controls, the user will remain on the current page. in addition, output to the work area will not permit caching by the browser.

For example, if a customer in the bill payment application, having selected a payee, is on the amount screen, and then attempts to select the "Back" browser navigational control, the amount screen will remain as the current screen until the transaction is submitted to the server or the customer navigates using the application buttons.

One reason for disabling the browser navigational controls is that the present bill payment application is an application in which the sequence of events and the flow of data in sequence is important. Browser navigational controls, such as "Forward" and "Back" are best applied to applications where a user can navigate freely with no dependency on what has gone before.

As in any link to a financial system's computer network, the server of the financial institution will have features to prevent customer manipulation of the browser controls to achieve forbidden access. Forbidden access includes any transition to an inappropriate part of the application or any access to another customer's session. In addition, the financial institution's server will protect it from fatal server platform or application errors.

Within the bill payment application, there will be at least four channels available to a customer. These four channels are Account Information, Payments and Payees, Mailbox, and Customer service. The Account Information channel provides the customer with information regarding his or her balance

summary. The Payments and Payees channel permits the customer to make a bill payment or to add, view, amend, or delete payee information. The Mailbox channel permits the customer to read messages from the financial institution, to write messages to the financial institution, or to view saved messages between the customer and the financial institution. Messages from the financial institution can include special offers to one or more customers of the financial institution. The Customer Service channel permits a customer to report a bill payment problem, to save credit card account information (if the customer is unable to submit this information by means of the Account Information channel), and to read messages from the financial institution, to write messages to the financial institution, or to view saved messages between the customer and the financial institution messages (if the customer is unable to send the message by means of the Mailbox channel).

More specifically, it is anticipated that, within the Account Information channel, a customer's credit card account activity will be written to a transaction journal. This transaction journal will, in one preferred embodiment, be maintained on the financial institution's computer network.

Further, within the Payments and Payees channel there are two subchannels, a Bill Payments subchannel and a Payee Information subchannel. The Bill Payments subchannel permits a customer to make a payment on a single bill to a payee, to set up a recurring payment occurring at some identified interval, or to see or change a payment prior to the transmission of the payment to the financial institution. The Payee Information subchannel permits a customer to add a payee, see or change payee information, or to delete a payee.

As described above, the Mailbox channel permits the customer to read messages from the financial institution, to write messages to the financial institution, or to view saved messages between the customer and the financial institution. Messages from the financial institution can include special offers to one or more customers of the financial institution.

As also noted above, the Customer Service channel permits a customer to report a bill payment problem, to save credit card account information

(if the customer is unable to submit this information by means of the Account Information channel), and to read messages from the financial institution, to write messages to the financial institution, or to view saved messages between the customer and the financial institution messages (if the customer is unable to send the
5 message by means of the Mailbox channel).

It will be appreciated that one aspect of the present invention is the ability to navigate among these four channels. In so navigating, a customer, upon selecting a channel, is presented with an appropriate task bar, permitting the customer to select the above-identified tasks in the channel. Further, in a preferred
10 embodiment of the present invention, until the customer selects a task, descriptions of the function of each task are displayed in the work area. In addition, if only one task is available, that task is automatically selected upon navigation to the channel.

In one embodiment, when changing channels, customers are not queried or notified as to whether or not they want to leave a channel, nor are they
15 notified that data entry performed in that task will not be saved upon selecting another task or channel. After submitting a "Payments & Payees" (i.e., financial) transaction, the customer should not be able to navigate to another area until the host response message is received and displayed to the customer.

The customer's browser will allow the customer to print any page in
20 the bill payment using the browser's imbedded print functionality.

Within the Account Information channel, a customer can perform the following functions for the credit card used for sign-on either on-line or via e-mail: see credit card account status, and activity since last statement on-line; save account activity; conduct account-related functions via the account information section, on-
25 line, including: last bill balance and date, credit line amount, available credit amount, unpaid balance, cash advance amount, next payment and date, miles or dollars award as of last statement, total miles/dollars, and the complete transaction journal for that customer for the past 90 days.

Within the Mailbox channel, a customer can send and receive e-mails to/from the financial institution. In addition, in an embodiment of the present invention, a customer can receive special offers such as marketing offers.

5 Within the Customer Service channel, a customer can send and receive e-mails to/from the customer service division of the financial institution. In addition, the Customer service channel will permit the customer to report a bill payment problem via structured e-mail and to receive an e-mail and letter notifying him or her of NSF payments charged to the credit card. The Customer Service channel will also permit a customer to conduct account-related functions via free-
10 form e-mail, including, but not limited to: conversion requests, change of name/address/phone number, change of PIN, requests for a duplicate statement, requests for an increase in credit line, inquiries regarding a turn down at POS/ATM ("Point of Sale/Automatic Teller Machine"), and initiate credit card disputes.

15 In the present invention, there is provided an application time out. For example, in one embodiment, after five minutes of inactivity, a time out will occur. In this embodiment, after four minutes of inactivity, the customer will receive an error message stating, "For your security and protection: Your session will time out if there is no activity. Would you like more time?" The customer is then offered two choices, either "OK" or "Cancel." If the customer chooses "OK," then the
20 session timer will be reset to allow another five minutes. If the customer selects "Cancel" and there is no activity within 1 minute, or if the customer does not respond to the keep alive message, the user will receive a message stating "For your security and protection, your session was terminated."

25 Within the program, the customer can navigate among tasks. In one embodiment, this is accomplished when the customer select tasks from the tool bar. In a preferred embodiment, the tool bar is displayed on the left side of the screen. Once selected, functions within the tasks are displayed in the work area.

30 In addition, the customer can navigate within the work area.. For example, in one embodiment, all information displayed will fit within the work area horizontally. Scroll bars will appear when necessary to allow the customer to

navigate up and down. Side to side scrolling will not be used except when the browser cannot be set to 800 x 600.

5 Within one embodiment of the present invention, the bill payment application will contain "Back," "Next" and "Home" navigation buttons within the work area.

 An aspect of the present invention is an improved payment capability. This enhanced capability is based upon the ability of the present bill payment application, after a customer submits to the server of the financial institution an amount for payment to a payee, to determine whether the customer has sufficient
10 funds in his or her checking account by querying the Automated Clearing House and, if there are insufficient funds to cover the payment from the checking account, permitting, under certain circumstances, a charge against the cash line of the customer's credit card account. For example, if a customer designates payment of a certain amount to a payee and, upon presentation of the debit amount to ACH, the
15 debit is rejected for not sufficient funds ("NSF"), then the payment amount will be posted to the customer's credit card account as a cash advance. In this aspect of the present invention, the bill payment service will be unaffected by NSF's until or unless the customer's credit card is over the credit limit ("OCL"). The bill payment service is then rendered unusable to that customer.

20 Within the scope of the present invention, there are several scenarios when a payment amount results in a NSF signal from ACH.

 In a first scenario, there is sufficient available cash line (including cushion) on the customer's credit card to cover the payment. In this scenario, the bill payment application increments a Bill Payment NSF ACH Debit Counter and posts a
25 debit against the cash line of the credit card account. It will be appreciated that the debit amount can reflect any applicable cash fee or interest schedule in place on the credit card account.

 In a second scenario, there is insufficient available cash line (including cushion) on the credit card account to cover the payment, but the debit
30 will not put the credit card account over the total credit line (i.e., purchases and

cash). In this scenario, the bill payment application increments a Bill Payment NSF ACH Debit Counter; increments a Bill Payment Cash Line OCL Debit Counter; posts a debit against the cash line of the credit card account; and sends a communication to the customer that a payment for which there was insufficient funds was paid that put the customer over his or her cash line.. It will be appreciated that the debit amount can reflect any applicable cash fee, over credit limit fee, or interest schedule in place on the credit card account.

In a third scenario, there is insufficient available cash line (including cushion) on the credit card account to cover payment and the debit will put the credit card account over the total credit line (i.e., purchases and cash). In this scenario, the bill payment application increments a Bill Payment NSF ACH Debit Counter; increments a Bill Payment Cash Line OCL Debit Counter; increments a Bill Payment OCL Counter; posts a debit against the cash line of credit card account; sends the customer an urgent communication that they are over his or her credit line and that the financial institution will be unable to release any further payments (and by virtue of being OCL, to authorize any further credit card purchases) unless the customer remits OCL amount. It will be appreciated that the debit amount can reflect any applicable cash fee, over credit limit fee, or interest schedule in place on the credit card account. In the event that the customer sends payment for all OCL moneys, the Bill Payment OCL payment counter should be incremented.

A preferred embodiment of the present invention contains an analytical tool to measure response time of the system, with a particular emphasis upon measuring the performance of the financial institution's servers. Response times will be measured from when the customer initiates a transaction until a completed response.

Individual performance statistics that can be measured include log-on time (response to Account Number/PIN request); connectivity success rate; error-free sessions; screen-to-screen transition; and server availability. Suitable satisfactory performances for these performance statistics are 30 seconds for log-on time; 99.5% of the attempts to connect to the financial institution's computer

network are successful; 99.5% of the sessions take place without errors; 3-5 seconds as the maximum amount of time for screen-to-screen transitions, from initiation of transition to completion of the screen; and 99.5 % of the time the financial institution's server is available.

5 In one preferred embodiment of the present invention, a customer will only be able to access one credit card account and one checking account. In this embodiment, since there is no crossover of functionality between the two accounts, there is no need for the customer to designate which account he or she wishes to use. In another embodiment of the present invention, more than one credit card account
10 and more than one checking account may be used by the customer. In this embodiment, the customer designates which credit card account and which checking account will be used to make a payment.

 In accessing the bill payment system of the present invention, a customer will require certain minimum hardware and software components. In one
15 embodiment of the present invention, a customer accesses the financial institution's computer network by dialing in to the financial institution's computer network using a browser packaged with a dialer. This browser will provide 128 bit encryption. Such a browser will operate on any PC with the following minimum system requirements: 6 MB disk space, 8 MB Random Access Memory ("RAM"), a 386
20 processor, and a 14.4 modem. The operating system must be Windows 3.x, Windows 95 or Windows NT. Macintoshes must have operating system 7.x or higher, 6 MB disk space, 8 MB RAM, and a 14.4 modem.

 To permit the easiest navigation, the optimal screen setting is 800 x 600. If settings are 640 x 480 or less, the screen options may need to be changed
25 (e.g., hide location information, tool bar, etc.) in order to view an optimal work area or the customer must scroll to reach the channel buttons.

 Customer information will be provided for user verification/authentication and enrollment, as well as payment instructions, information requests and service requests. If a potential customer wishes to enroll in
30 the bill payment application of the present invention, the customer must provide

various elements of data in order to process the enrollment form. Examples of such customer data are name, address, financial institution credit card account number, Social Security Number ("SSN"), mother's maiden name ("MMN"), Card Verification Value/Card Validation Code ("CVV2/CVC2"), date of birth and first school attended. Such data is needed to access a customer's account information. Additionally, a voided check must be provided to furnish the account number and routing information for ACH debits. If a customer designates an invalid account, or the customer's application is rejected for any reason, a letter will be sent informing that customer.

One additional feature of the present bill payment application is security. A customer must enter his/her credit card cash PIN to verify that he/she is the authorized user of the system. The customer will also have to enter his/her credit card account number. The account number will be stored on the user's system and sent to the financial institution's computer network with the entered credit card cash PIN. A limit for invalid PIN attempts through the present bill payment system will be maintained separately from that for ATM access. In one preferred embodiment, each access path will be allowed up to six invalid PIN entry attempts before access is suspended for the remainder of that day. The PIN counter is reset automatically each day.

In the bill payment system of the present invention, a front-end server drives the user interface and transmits requests and data between the user interface and the transaction processing system. Thus, a front-end server will accept commands from the user through the user interface when the user is on-line. The front-end server will then update the screens to reflect new actions (show new menu choices, show information, etc.), and route instructions to the appropriate systems for execution.

The user interface and the front-end server are connected by means of a dial-in network that will provide the connectivity between the customer and the front-end server. Bill payment customers will be identified and routed via a token imbedded in the customer's software.

A bill payment engine will act as the system for transfer of funds and payments. Payment instructions are sent via the front-end server to a transfer processing system, which in turn, routes the payment instructions to the bill payment engine. The bill payment engine provides information on payment history, payment status and confirmation numbers back to the customer via transfer processing system and the front end server. It can also provide information from a directory of merchants.

Aspects of the present invention include validation of the PIN and verification of enrollment of a customer in the bill payment application. Each of these processes is performed by a server. It can be appreciated that these servers do not need to be separate servers, but that, in an embodiment of the present invention, the same server can perform both these functions.

In an embodiment of the present invention, only the most recent 90 days of data are available to the customer. This data is available on-line. The amount of money paid to each payee year-to-date is stored on-line and can be viewed until April 15 (tax time) of the next year. All transaction data is stored on microfiche for seven years and can be accessed upon request by a customer, if needed.

In an embodiment of the present application, customer applications for enrollment in the bill payment application will be processed by mail. Upon request, sign-up kits containing the disk(s) and a instruction booklet will be mailed to the customer. A PIN notification form will be sent separately, if requested. To maximize productivity and quality during the enrollment process, an enrollment server will retrieve demographic and account data to display on the enrollment screen. Suitable data that will be collected include cardholder name, expiration date, billing address, SSN, date of birth ("DOB"), MMN, home telephone number, business telephone number, credit card status code, CVV2, CitiPay ID and RTRV information. Information received from the enrollment server will be verified against the customer's application. Customers that meet the verification procedure will be subjected to a CHEX screening to avoid chronic bad check writers. If all criteria had

been met for bill payment, the first school attended will be entered along with any MICR-line information needed from the customer's voided check (e.g. American Banking Association ("ABA") #). The billing plan and/or the solicitation code will also be entered. Daily, the file of accepted enrollments will be sent to the bill
5 payment engine. This will complete enrollment.

Based on the customer's request on the application form, the customer will receive diskettes for either a PC or a Mac and a Compact Disk-Read Only Memory ("CD-ROM") with both versions during fulfillment.

10 In an embodiment of the present invention, letters will be sent to the customer whenever the bill payment service is terminated or rejected, an NSF occurs, or to confirm any telephone instructions.

An aspect of the present bill payment application is to provide customer service. The Customer Service of the financial institution will handle calls of five basic types: technical, investigation, product capability, account-related
15 inquiries, and bill payment.

With regard to the present bill payment application, customer service representatives can track bill payments on behalf of the customer. Because all payments will be sent either by means of Electronic Funds Transfer ("EFT") or by bank check, end-to-end tracking of payments can be provided. Customer Service
20 will be able to verify that funds were received or initiate investigations on behalf of the customers.

The present invention also provides one or more methods to identify a customer as a bill payment customer. One method is a note in the records of a customer indicating enrollment in the bill payment application.

25 One aspect of the present invention is security. The primary security requirements are to provide for authentication/validation of the customer and to provide a means of secure transmission of data between the customer and the financial institution.

There will also be e-mail notifications to the customer. This will occur for general broadcast messages (i.e. system outage) or when there is a problem with a payment instruction.

5 In addition to managing screen flows and presenting and transmitting information, the front end server will check to determine that the credit card account status code is unexpired and the customer is an active bill pay customer before allowing access into the bill payment menu.

10 In another aspect of the present invention, after bill payment is scheduled, disbursement can be made by means of either an electronic funds transfer ("EFT"), if the merchant can be reached electronically, or bank check.

15 It will be appreciated that the bill payment application of the present invention can result in additional transactions that can appear in the credit card statement of accounts. These can include a bill payment initiation fee, a monthly fee for the bill payment service, and cash advances that are a result of NSF returns from the ACH. In all three cases, the description of the transaction should be clear to the customer that it is for bill payment and the reason for the charged fee.

20 In an alternate embodiment of the present bill payment application, rather than relating the enhanced payment capability to an OCL threshold, the bill payment application will grant credit based on an "Maximum Bill Payment Guarantee" algorithm of the logic form of "a maximum of \$X will be available over the course of Y consecutive days".

25 The bill payment engine will receive updated credit card account status codes to determine if a customer will be inactivated (all future dated payments will be canceled). In a preferred embodiment of the present invention, for a customer to remain active in the bill payment application, he or she must have either an open account or OCL within cushion. If a customer does not have an open account or OCL within cushion, that customer's bill payment account will be closed.

30 In the event that a customer is inactivated, and future payments will not be sent out, the bill payment customer will be contacted via mail to advise that the bill payment service has been shut down for his or her account.

It is anticipated that the present bill payment application will entail collecting certain credit data regarding the bill payments. In a preferred embodiment of the present invention, such data will include a Daily Transaction Report, a file of all daily bill payment activity which includes the following data fields: Account
5 Number, Payee, Check Amount, Pay Date, and Bill Pay Reference Number; a Daily NSF Report: a file of all daily bill payment NSF activity which includes the following fields: Account Number, Bill Pay Reference Number, Check Amount, Pay Date, Return Reason Code, and Represent Indicator; a Daily Enrollment Report, a
10 file of new enrollment activity which includes the following data fields: Account Number and Enrollment Date; and a Transactions Greater than \$3,500 Report, a daily file of all check activity in excess of \$3,500 which includes the following data fields: Account Number, Payee, Check Amount, Pay Date, Bill Pay Reference
Number.

It is also anticipated that the present bill payment application will
15 entail collecting certain security data regarding the bill payments. In a preferred embodiment of the present invention, such data will include a High Dollar Payments Report; a daily file of any single payment request over \$5000 which includes the following data fields Account Number, Customer Name, Payee Name and Address, Amount of Payment, Date Payment Made, DDA Number, Type of Payment (one-
20 time/recurring), and Source of Payment Instruction (either PC or voice); a Voice Bill Payment Request Report, a file of bill payments in which the source of payment request is by voice and the amount is over \$500 which includes the following data fields Account Number, Customer Name, Payee Name and Address, Amount of Payment, Date and Time of Payment, DDA Number, Type of Payment
25 (recurring/one-time), and Type of Payee (on standard list/first time payee); a Voice Bill Payment Request - First Time Payee Report, a file of bill payments in which the source is by voice and the payee is not on a standard or customized list which includes the following data fields Account Number, Customer Name, Payee Name and Address, Amount of Payment, Date and Time of Payment, DDA Number, and
30 Type of Payment (recurring/one-time).

Referring now to the drawings, Figure 1 represents one embodiment of the present invention for a home-based bill payment application with improved payment capability wherein the Bill Payment Pilot User Interface represents the interface by which the user accesses the bill payment program; TPS represents the Transaction Processing System; GTPS represents the Generic Transfer and Payments System; GHSDS represents Global Home Service Delivery System; GCMS represents Global Cash Management Services; and RPS represents Remittance Processing Service.

Figure 2 is a flow-chart indicating the processes for processing solicited and unsolicited requests for the present invention, wherein UCSS represents Universal Customer Support System and MIS represents Management Information System.

Figure 3 is a flow chart depicting one embodiment of the present invention in which a payment is applied between a checking account and a credit card account depending upon the whether there are sufficient funds in the checking account/demand deposit account ("DDA"); and

Figure 4 represents one embodiment of the home-based bill payment system corresponding to the present invention, wherein 1 represents the user; 2 represents the user's computer allowing a communications link 3 to the network of a financial institution 6, which has a communication link 3 to a database 4 which assays the balance in the user's checking account.

Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

CLAIMS:

1 1. A method of bill payment, comprising:
2 initiating a communication link between a user's computer and a
3 server on a computer network of a financial institution,
4 wherein the user has at least one credit card account and at least one
5 checking account;
6 the user selecting a payee to be paid and an amount to be paid to the
7 payee;
8 the computer network initiating a communication link between the
9 financial institution and a database which assays the balance in the user's
10 checking account;
11 the computer network querying the database to determine whether the
12 user has sufficient funds in the user's checking account to cover the amount to be
13 paid to the payee;
14 wherein if there are not sufficient funds in the user's checking account
15 to cover the amount to be paid to the payee, the computer network of the
16 financial institution will debit the amount to be paid to the payee to the user's
17 credit card account; and
18 disbursing the amount to be paid to the payee.

1 2. The method according to Claim 1, wherein the database is the
2 Automated Clearing House.

1 3. The method according to Claim 2, wherein disbursing the amount to
2 be paid to the payee is by means of an electronic funds transfer.

1 4. The method according to Claim 2, wherein disbursing the amount to
2 be paid to the payee is by means of a bank check.

1 5. A system for bill payment comprising:

2 a communication link between a user's computer and a server on a
3 computer network of a financial institution;

4 a communication link between the financial institution and a database
5 which assays the balance in the user's checking account;

6 debiting means for debiting the amount to be paid to the payee to the
7 user's credit card account if there are not sufficient funds in the user's checking
8 account to cover the amount to be paid to the payee;

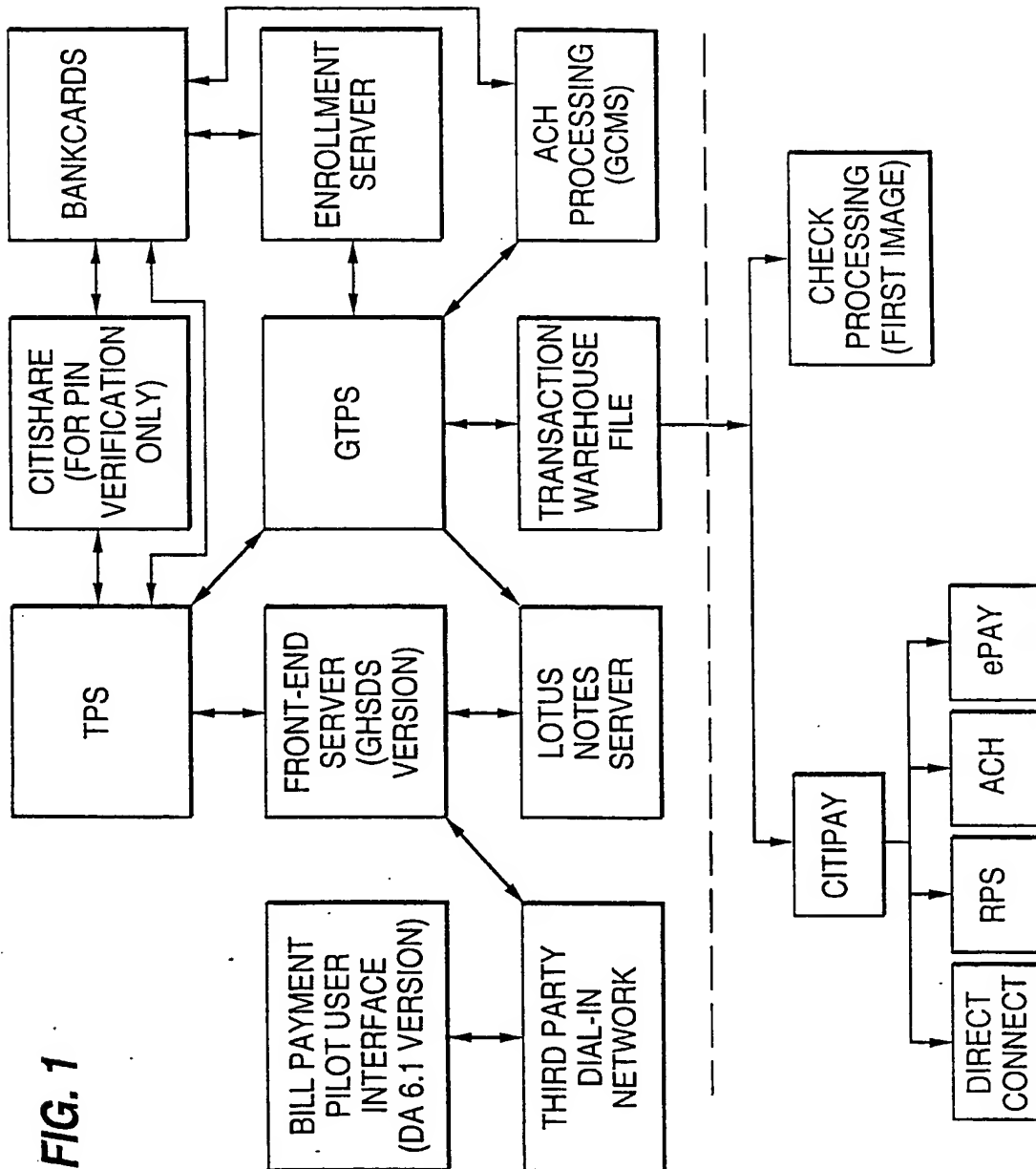
9 disbursing means for transferring the amount to be paid to the payee.

1 6. The method according to Claim 5, wherein the database is the
2 Automated Clearing House.

1 7. The method according to Claim 6, wherein disbursing the amount to
2 be paid to the payee is by means of an electronic funds transfer.

1 8. The method according to Claim 6, wherein disbursing the amount to
2 be paid to the payee is by means of a bank check.

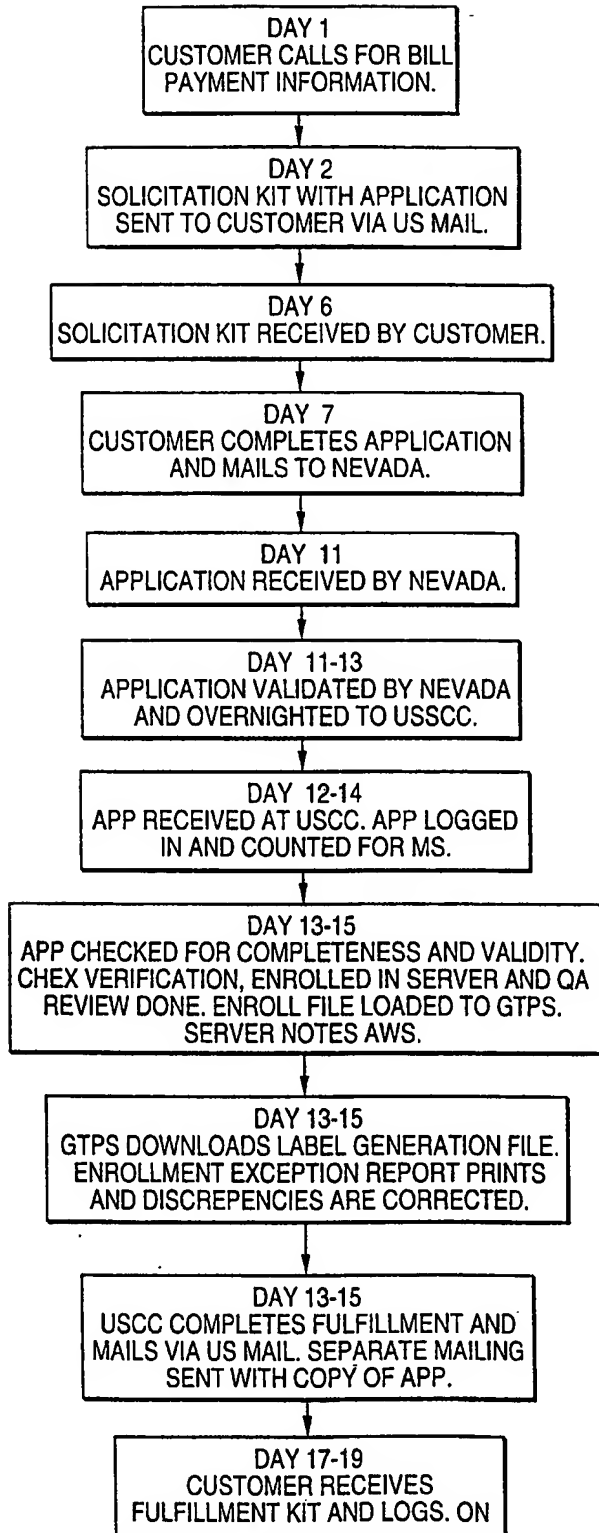
FIG. 1



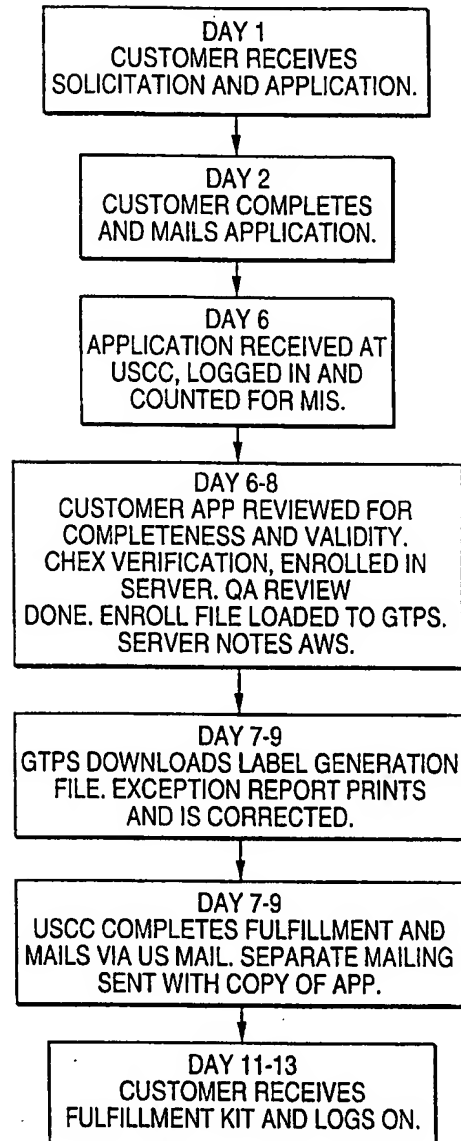
2/4

FIG. 2A

UNSOLICITED

**FIG. 2B**

SOLICITED



3/4

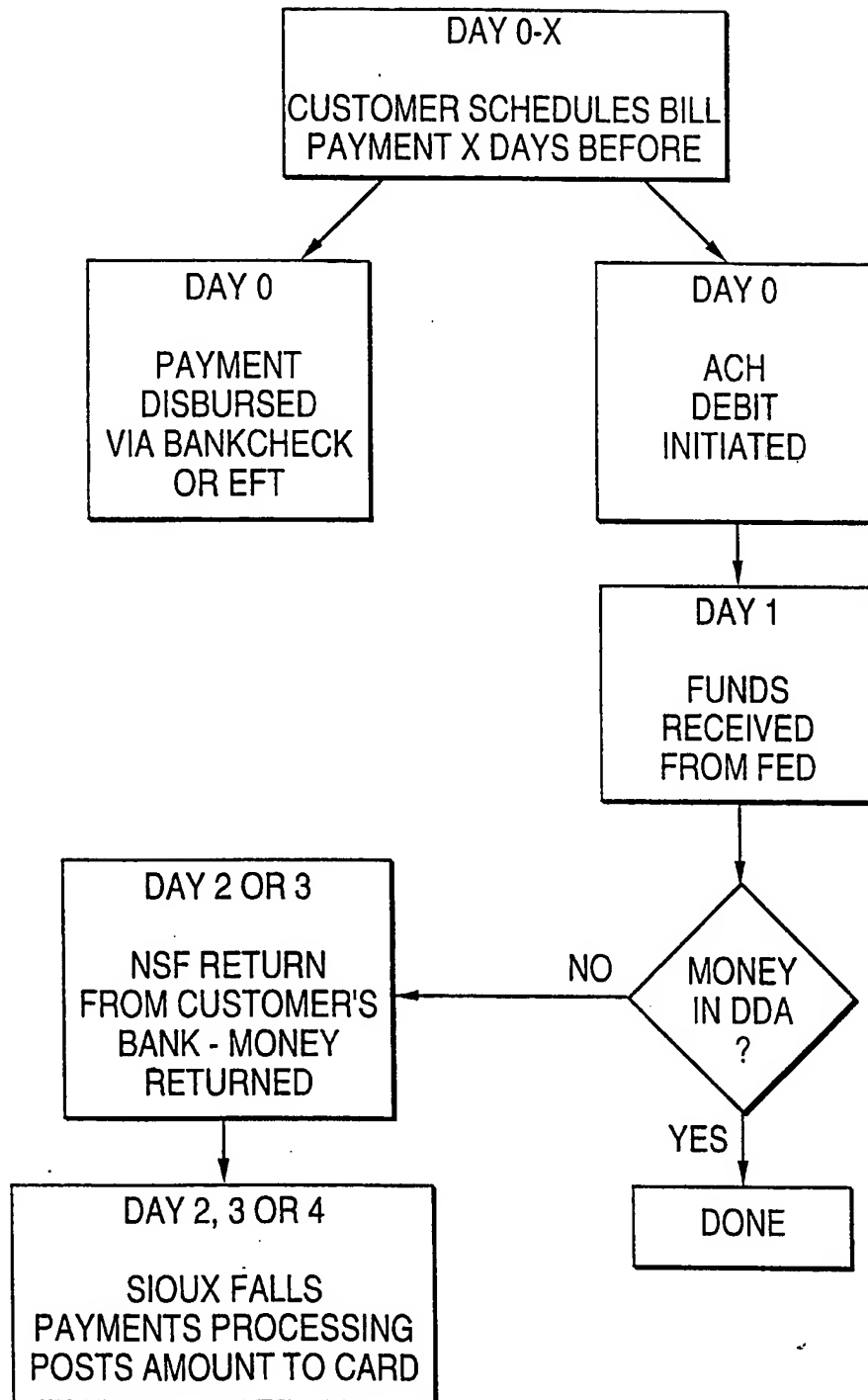
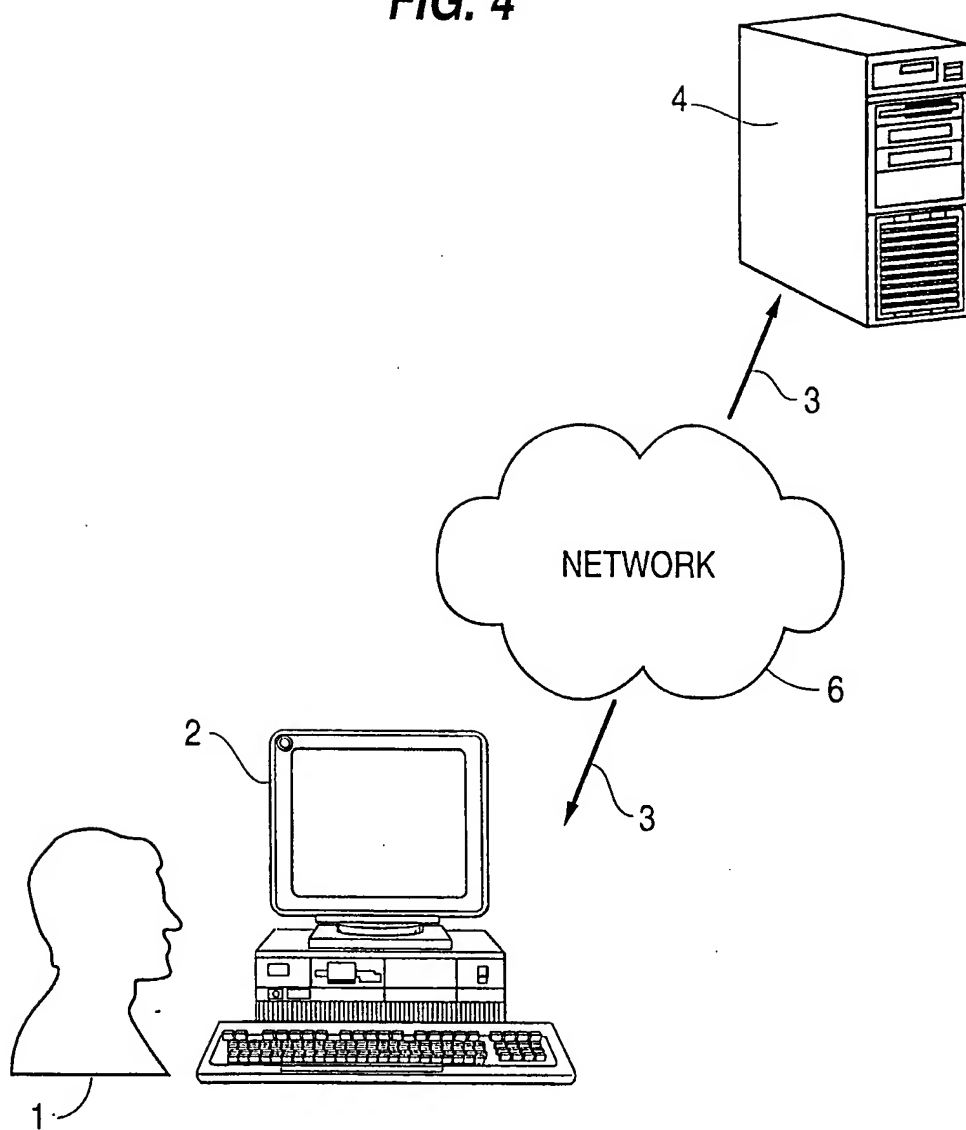

FIG. 3

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/12235

A. CLASSIFICATION OF SUBJECT MATTER		
IPC(6) :GO6F 157:00 US CL :705/40		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) U.S. : 705/39-45, 34-35		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,704,046A (Hogan) 30 December 1997, column 6, line 48 to column 7, line 5.	1, 3, 5, 7
A	US 5,699,528A (Hogan) 16 December 1997, column 4, lines 22-67.	1-8
A	US 5,652,786A (Rogers) 29 July 1997, column 3, lines 1-61.	1-8
A	US 5,465,206A (07 November 1995) column 13, line 49 to column 14, line 31.	1-8
A	US 5,383,113A (Kight et al.) 17 January 1995, column 6, lines 18-62.	1-8
A	US 4,823,264A (Deming) 18 April 1989, column 3, line 65 to column 4, line 22.	1, 5
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 13 AUGUST 1998	Date of mailing of the international search report 13 OCT 1998	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer FRANTZY POINVIL  Telephone No. (703) 305-9779	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/12235

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US RE32,985A (Nagata et al.) 11 July 1989, column 5, line 54 to column 6, line 18.	1-8